Appendix B
Glossary

B-1. Terms

accelerator - chemical admixture that increases the rate of a chemical reaction.

activator - chemical admixture that activates a catalyst to begin a reaction.

admixture - materials other than water, fine aggregate, or hydraulic cement used as an component in grout.

aggregate - granular mineral material such as sand, ground slag, or rock that is used as fine aggregate and mixed with water and cement to form a grout.

aquifer - subsurface stratum or zone capable of producing water as from a well or spring.

base - primary component in a grouting system.

batch system - injected method in which all of the grout components are mixed at one time prior to injection.

bearing capacity - maximum unit load a soil mass or rock mass will sustain without excessive settlement or failure.

bentonite - clay containing 75 percent or more of smectite characterized by its large volume increase on wetting.

bond strength - measure of the adherence of grout to other materials in contact with it.

carcinogenic - substance or agent that produces or tends to produce cancer.

catalyst - compound that increases the speed of a reaction but remains unchanged.

catalyst system - combination of compounds (an initiator and an accelerator) that cause a chemical reaction to begin and promote the reaction after initiation.

chemical grout - see **grout**, **chemical**.

coefficient of permeability - velocity of laminar flow (centimeters per second) through a unit cross-sectional area of a porous medium under unit hydraulic gradient at a standard temperature.

coefficient of transmissivity - flow rate through a unit width vertical strip of an aquifer under a unit hydraulic head.

colloid - substance (usually a liquid) composed of finely divided particles that do not settle out of suspension.

colloidal grout - see **grout**, **colloidal**.

concrete, preplaced aggregate - concrete produced by placing coarse aggregate in forms and filling the voids with a cementitious grout.

cure time - time elapsed between mixing the components of a grout and the development of the desired hardened properties.

curtain grouting - see **grouting**, **curtain**.

displacement grouting - see **grouting**, **displacement**.

emulsion - liquid containing a second dispersed phase composed of minute droplets of liquid.

epoxy resins - multicomponent resin consisting essentially of epoxide groups that is characterized by very high tensile, compression, and bond strengths.

fault - rock fracture along which observable displacement has occurred.

fines - soils or granular material with a nominal size smaller than 0.075 µm.

fissure - fracture in a rock or soil mass.

fracture - fissure or break in a rock mass that may be a natural consequence of folding or faulting or artificially produced by pressure injection.

fracturing - intrusion of grout along cracks or fissure at pressures sufficient to move the crack surfaces apart.

gel - condition in which a liquid grout begins to develop strength.

gel time - time interval elapsed between the mixing of a fluid grout and the formation of a gel.

grout - substance that has sufficient fluidity to be injected or pumped into a porous body or into cracks and is intended to harden in place (see **grout**, **cementitious**; **grout chemical**, etc.).

grout, cementitious - mixture of cementitious material and water, with or without aggregate, proportioned to produce a pourable consistency without segregation of the constituents; also a mixture of other composition but of similar consistency. (See also **grout**, **neat cement** and **grout, sanded**.)

grout, chemical - solution injected into a porous body or a crack that reacts in place to form a gel or solid.

grout, colloidal - grout in which a substantial proportion of the solid particles have the size range of colloid.

grout, epoxy - grout which is a mixture of commercially available ingredients consisting of an epoxy bonding system, aggregate or fillers, and possibly other materials.

grout, field-proportioned - hydraulic-cement grout which is batched at the jobsite using water and predetermined portions of portland cement, aggregate, and other ingredients.

grout, hydraulic-cement - grout which is a mixture of hydraulic cement, water, and other ingredients, with or without fine aggregate.

grout, machine base - grout which is used in the space between plates or machinery and the underlying foundation and which is expected to maintain essentially complete contact with the base and to maintain uniform support.

grout, neat cement - fluid mixture of hydraulic cement and water, with or without other ingredients not including fine aggregate; also the hardened equivalent of such mixture.

grout, preblended - hydraulic-cement grout that is a commercially available mixture of hydraulic cement, aggregate, and other ingredients which requires only the addition of water and mixing at the jobsite; sometimes termed pre-mix grout.

grout, sanded - grout in which fine aggregate is incorporated into the mixture.

grout header - pipe assembly attached to the grout hole through which grout is injected.

grout take - amount of grout injected into a soil or rock formation, determined by measuring the volume of grout placed per unit volume of formation.

grout slope - natural slope of fluid grout injected into preplaced-aggregate concrete.

groutability - degree to which a soil or rock unit can be grouted.

grouted-aggregate concrete - see **concrete, preplaced-aggregate.**

grouting - process of filling with grout. (See also **grout**.)

grouting, advancing-slope - method of grouting by which the front of a mass of grout is caused to move horizontally through preplaced aggregate by use of a suitable grout injection sequence.

grouting, closed-circuit - injection of grout into a hole intersecting fissures or voids which are to be filled at such volume and pressure that grout input to the hole is greater than the grout take of the surrounding formation, excess grout being returned to the pumping plant for recirculation.

grouting, containment - see **grouting, perimeter**.

grouting, contraction-joint - injection of grout into contraction joints.

grouting, control-joint - see **grouting**, **contraction-joint**.

grouting, curtain - injection of grout into a subsurface formation in such a way as to create a zone of grouted material transverse to the direction of anticipated water flow.

grouting, displacement - grouting that is done in order to physically move the solid material adjacent to the point of grout injection.

grouting, high-lift - technique in concrete-masonry construction in which the grouting operation is delayed until the wall has been laid up to a full story height.

grouting, low-lift - technique of concrete-masonry wall construction in which the wall sections are built to a

height of not more than 5 ft (1.7 m) before the cells of the masonry units are filled with grout.

grouting, open-circuit - grouting system with no provision for recirculation of grout to the pump.

grouting, penetration - grouting that is done to fill in the void spaces between solid particles without forcing the particles apart.

grouting, perimeter - injection of grout, usually at relatively low pressure, around the periphery of an area which is subsequently to be grouted at greater pressure; intended to confine subsequent grout injection within the perimeter.

grouting, slush - distribution of a grout, with or without fine aggregate, as required over a rock or concrete surface which is subsequently to be covered with concrete, usually by brooming it into place to fill surface voids and fissures.

grouting, stage - sequential grouting of a hole in separate steps or stages in lieu of grouting the entire length at once.

hardener - component in an epoxy or resin grout that causes the base material to cure to a solid.

hydrostatic head - fluid pressure measured by the height of water above a stated level.

inert - material that does not participate in a chemical reaction.

inhibitor - material that slows the rate of a chemical reaction.

Joosten process - chemical-grouting process using sodium silicate solution and a concentrated salt (electrolyte) solution generally as a two-step process.

Malmberg system - grouting system based on addition of sodium silicate solution and weak acids.

material safety data sheet (MSDS) - formal document furnished by a manufacturer that states in detail all safety concerns in using or disposing of a product.

metering pump - pump that allows separate components of a grout to be dispensed in any desired proportion or in fixed proportions.

mutagenic - substances that can produce genetic damage that becomes apparent in offspring.

Newtonian fluid - fluid that shows a constant velocity under different rates of shear.

packer - device inserted into a grout hole that expands mechanically or by inflation to restrict the flow of grout to a specific part of the grout hole.

penetrability - property of a grout that describes its ability to fill up a porous mass.

penetration grouting - see **grouting, penetration**.

permeability - property of a porous material that indicates the rate at which a liquid can flow through the pore spaces.

pH - measure of the hydrogen ion concentration in a solution; values below pH 7.0 indicate acid solutions; values above pH 7.0 indicate alkaline solutions.

porosity - percentage of a solid volume that is taken up by voids or pores.

positive displacement pump - pump that will build pressure when a pump line is closed until the pump motor stalls or the pipe fails.

reactant - in a grout, a component that interacts chemically with the base material.

refusal - point in the grouting process when the resistance of the formation is equal to the pressure developed by the injection pump so that grout flow ceases.

retarder - grout component that slows the rate at which chemical reactions occur in the grout.

seepage - movement of a small volume of fluid through fissured rock or soil.

shelf life - maximum time a material can be stored and retain its chemical reactivity.

slabjacking - injecting grout under a concrete foundation or pavement to raise it to a desired level.

slaking - deterioration of a material (especially an aggregate) as a result of soaking in water.

stage grouting - grouting of a hole in individual steps or stages as opposed to grouting the hole in one operation.

syneresis - contraction of a gel due to loss of liquid.

time of setting - time interval between grout mixing and gelation.

toxic substances - substances that are poisonous.

unconfined compressive strength - stress (load per unit area) at failure of a cylindrical specimen subjected to axial loading without lateral or confining stress.

uplift - vertical displacement of a formation due to grout injection.

viscosity - internal resistance of a liquid to flow.

void ratio - ratio of the volume of voids in rock or soil to the volume of the rock or soil mass.